

Claim Listing

The following claim listing replaces all existing claims.

10. (canceled) ~~A method of forming an array of particles, said method comprising the following steps:~~

~~providing a first electrode positioned in a first plane and a second electrode positioned in a second plane different from the first plane, a polarizable liquid medium having a refractive index located therebetween, and a plurality of particles located in said liquid medium, said particles having a refractive index different from the refractive index of the liquid medium; and~~

~~generating an electric field at an interface between the second electrode and the liquid medium, wherein the second electrode comprises either~~

~~(b) a planar light-sensitive electrode, the method further comprising the step of illuminating said second electrode with a predetermined light pattern, such that the illumination in combination with the interfacial electric field resulting in formation of an ordered array of particles in a designated area of the second electrode, said designated area being defined by the illumination pattern~~

or

~~(b) a planar electrode having a surface and an interior, the surface or interior having been modified to produce spatial modulations in properties of the second electrode, said properties affecting the local distribution of the electric field at the interface, such that the generation of the electric field results in formation of an ordered array of particles in a designated area of the second electrode, said designated area being defined by the spatial modulations in the properties of the second electrode.~~

11. (Currently amended) ~~The method of claim 10~~ ~~26~~ wherein the second electrode comprises a is the planar light-sensitive electrode, the method further comprising the step of illuminating said second electrode with a predetermined light pattern, such that and wherein the illumination in combination with the interfacial electric field resulting in formation of an ordered array of particles in a designated area of the second electrode, said designated area being defined by the illumination pattern.

12. (Currently amended) ~~The method of claim 10~~ ~~26~~ wherein the physical or chemical patterning of the second electrode, which is comprises a planar electrode, distributes the electric field in a predetermined manner so as to define having a surface and an interior, the surface or interior having been modified to produce spatial modulations in properties of the second electrode, said properties affecting the local distribution of the electric field at the interface, such that the generation of the electric field results in formation of an ordered array of particles in a designated area of the second electrode, said at least one designated area where the ordered array of particles is formed being defined by the

spatial modulations in the properties of the second electrode.

13. (Currently amended) The method of claim 10 26, wherein the second electrode comprises a silicon electrode.

14. (Currently amended) The method of claim 10 26, wherein the second electrode comprises an ITO film.

15. (Previously Presented) The method of claim 14, wherein the ITO film is deposited on a flexible transparent substrate

16. (Currently amended) The method of claim 12, wherein the properties of the second electrode comprise has been modified so as to affect its interfacial impedance or surface charge density.

17. (Currently amended) The method of claim 12, wherein the spatial modulations of the properties of the second electrode is carried out by modifying the second electrode also has an interior and the surface or the interior of the second electrode is modified by spatially modulated oxide growth, surface chemical patterning or surface profiling.

18. (Currently amended) The method of claim 12, wherein the second electrode also has an interior and property of the second electrode being modulated comprises impedance, one or more areas of the surface or the interior of the second electrode being are modified to exhibit low impedance, said areas of low impedance defining and wherein said at least one designated area where the ordered array of particles planar array of particles is formed are located in the areas of low impedance.

19. (Currently amended) The method of claim 12, wherein the second electrode comprises a is both physically or chemically patterned and light-sensitive electrode, said method further comprising the step of illuminating the interface with a predetermined light pattern to form an and said at least one designated area where the ordered array of the particles is formed is defined in accordance with the predetermined light pattern and the modified properties physical or chemical patterning of the second electrode.

20. (Currently amended) The method of claim 10 26, wherein the first electrode and the second electrodes each comprises a are both planar electrodes, said first and second electrodes being substantially parallel to another each other and separated by a gap, with the liquid medium containing the particles being located in the gap.

21. (Currently amended) The method of claim 10 26, wherein the electric field is generated by applying an AC voltage between the first and the second electrodes, with or without application of a DC voltage.

22. (Currently amended) The method of claim 10 26, wherein the particles, in forming the array, are transported in a direction substantially parallel to said interface.

23. (Currently amended) The method of claim 40 26, wherein the polarizable liquid medium comprises an electrolyte solution.
24. (Currently amended) The method of claim 40 26, wherein the particles are glass or polymeric beads.
25. (Currently amended) An array of particles prepared formed according to the method of claim 40 26.
26. (Newly Added) A method of forming an array of particles, said method comprising the following steps:

providing a first and second electrodes, each having a surface, said surfaces being opposed and positioned to accommodate a liquid medium between said surfaces, said liquid medium having polarizable particles suspended therein; and

generating an electric field at an interface between the second electrode and the liquid medium, wherein the second electrode comprises either:

- (a) a light-sensitive electrode capable of controlling the movement of the particles and/or the liquid medium in a direction substantially parallel to the electrode surface when an electric field is generated within said interface and the light-sensitive electrode is illuminated with a predetermined light pattern, resulting in formation of an ordered array of particles in at least one designated area of the surface of the second electrode, said designated area being defined by the illumination pattern; or
- (b) the second electrode is physically or chemically patterned to distribute an electric field in a predetermined manner, when an electric field is generated within said interface, in order to control the movement of the particles and/or the liquid medium in a direction substantially parallel to the electrode surface, said patterning affecting the local distribution of the electric field at the interface, such that the generation of the electric field results in formation of an ordered array of particles in at least one designated area of the surface of the second electrode.

27. (Newly Added) The method of claim 26 wherein the refractive index of the particles is different from the refractive index of the liquid medium.